Appl. No. 10/633,136
Response Dated August 14, 2007
Reply to Office Action of May 14, 2007

Docket No.: 18098
Examiner: Lu, Jia
TC/A.U. 2611

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1.   (Previously Presented) A method of determining a transfer function used for emphasizing a portion of an electromagnetic signal prior to being processed in a processing system comprising the steps of:

determining a discrete transfer function for said processing system;

determining a target transfer function such that said target transfer function multiplied by the inverse of said discrete transfer function produces a discrete pre-emphasis transfer function; and

transforming any unstable poles and/or zeros in said pre-emphasis transfer function to stable poles and/or zeros;

wherein said target transfer function represents a low pass FIR filter having a gain of about unity across substantially all of the frequency range of said FIR filter.

2.   (Currently Amended) The method of Claim 1, wherein said discrete transfer function is determined using one ~~or more selected from the group consisting~~ of an S-function, input and output signals, ~~the~~ inverse-invariant method, ~~and the~~ or Steiglitz-McBride algorithm.

Appl. No. 10/633,136
Response Dated August 14, 2007
Reply to Office Action of May 14, 2007

Docket No.: 18098
Examiner: Lu, Jia
TC/A.U. 2611

3.   (Original) The method of Claim 1, wherein said transformation of said unstable

poles and/or zeros is accomplished using an all pass filter.

4.   (Canceled).

5.   (Currently Amended) The method of Claim 1, wherein said processing system

comprises one ~~or more selected from the group consisting~~ of phase modulation, wideband

phase modulation, wideband fractional sigma delta modulation, ~~and~~ or wideband

fractional sigma delta modulation for a code division multiple access signal.

6.   (Currently Amended) A method for electromagnetic processing of an input wave,

wherein an input signal containing a characteristic of said input wave is processed to

produce a modified signal, said method comprising the steps of:

receiving said input signal containing said characteristic of said input wave;

transforming said input signal using a pre-emphasis transfer function based upon

determining a discrete transfer function for said processing of said input signal,

determining a target transfer function such that said target transfer function multiplied by

the inverse of said discrete transfer function produces said pre-emphasis transfer function,

and transforming any unstable poles and/or zeros in said pre-emphasis transfer function

to stable poles and/or zeros, wherein said target transfer function represents a low pass

FIR filter having a gain of about unity across substantially all of the frequency range of

said FIR filter;

processing said transformed input signal to generate said modified signal; and

Appl. No. 10/633,136
Response Dated August 14, 2007
Reply to Office Action of May 14, 2007

Docket No.: 18098
Examiner: Lu, Jia
TC/A.U. 2611

regulating said modified signal using a control signal containing another

characteristic of said input wave to produce an output signal.

7.   (Currently Amended) The method of Claim 6, wherein said discrete transfer

function is determined using one ~~or more selected from the group consisting~~ of an S-

function, input and output signals, ~~the~~ inverse-invariant method, ~~and the~~ or Steiglitz-

McBride algorithm.

8.   (Original) The method of Claim 6, wherein said transformation of said unstable

poles and/or zeros is accomplished using an all pass filter.

9.   (Canceled).

10.   (Currently Amended) The method of Claim 6, wherein said modified signal is a

phase modulated signal and said processing involves one ~~or more selected from the group~~

~~consisting~~ of phase modulation, wideband phase modulation, wideband fractional sigma

delta modulation, ~~and~~ or wideband fractional sigma delta modulation for a code division

multiple access signal.

11.   (Original) The method of Claim 6, wherein said characteristic used to regulate

said modified signal is magnitude.

12.   (Original) The method of Claim 6, wherein said step of regulating said modified

signal is performed using a plurality of segments.

13.   (Currently Amended) The method of Claim 12, wherein one or more of said

segments is independently controlled as a power amplifier by a portion of ~~said~~ two or

more signals that represent said input wave to contribute power to an output signal.

14.   (Currently Amended) The method of Claim 13, further comprising the step of

generating ~~an~~ said output signal by combining power outputted from one or more of said

segments.

15.   (Currently Amended) The method of Claim 14, wherein said step of generating an

output signal by combining power is accomplished using one ~~or more selected from the~~

~~group consisting~~ of power transformers, quarter-wave transmission lines, discrete LC

components, ~~and~~ or a Pi-networks.

16.   (Original) The method of Claim 12, wherein one or more of said segments is

independently controlled as a current source by a portion of ~~said~~ two or more signals that

represent said input wave to contribute current to an output signal.

17.   (Previously Presented) A method of determining a transfer function used for

emphasizing a phase signal from an input wave prior to being modulated in a phase

modulator, said method comprising the steps of:

determining a discrete transfer function for said phase modulator;

determining a target transfer function such that said target transfer function

multiplied by the inverse of said discrete transfer function produces a discrete pre-

emphasis transfer function; and

transforming any unstable poles and/or zeros in said pre-emphasis transfer

function to stable poles and/or zeros;

wherein said target transfer function represents a low pass FIR filter having a gain

of about unity across substantially all of the frequency range of said FIR filter.

18.   (Currently Amended) The method of Claim 17, wherein said discrete transfer

function is determined using one ~~or more selected from the group consisting~~ of an S-

function, input and output signals, ~~the~~ inverse-invariant method, ~~and the~~ <u>or</u> Steiglitz-

McBride algorithm.

19.   (Original) The method of Claim 17, wherein said transformation of said unstable

poles and/or zeros is accomplished using an all pass filter.

20.   (Canceled).

21.   (Previously Presented) An apparatus for electromagnetic processing of an input

wave, wherein an input signal containing a characteristic of said input wave is processed

in a processing circuit to produce a modified signal, said apparatus comprising:

Appl. No. 10/633,136
Response Dated August 14, 2007
Reply to Office Action of May 14, 2007

Docket No.: 18098
Examiner: Lu, Jia
TC/A.U. 2611

a filter for receiving said input signal containing said characteristic of said input

wave; and transforming said input signal using a pre-emphasis transfer function based

upon determining a discrete transfer function for said processing of said input signal,

determining a target transfer function such that said target transfer function multiplied by

the inverse of said discrete transfer function produces said pre-emphasis transfer function,

and transforming any unstable poles and/or zeros in said pre-emphasis transfer function

to stable poles and/or zeros, wherein said target transfer function represents a low pass

FIR filter having a gain of about unity across substantially all of the frequency range of

said FIR filter;

a processing circuit for processing said input signal after said transformation in

said filter to generate said modified signal; and

an output circuit for regulating said modified signal using a control signal

containing another characteristic of said input wave to produce an output signal.

22.   (Currently Amended) The apparatus of Claim 21, wherein said discrete transfer

function is determined using one ~~or more selected from the group consisting~~ of an S-

function, input and output signals, ~~the~~ inverse-invariant method, ~~and the~~ or Steiglitz-

McBride algorithm.

23.   (Original) The apparatus of Claim 21, wherein said transformation of said

unstable poles and/or zeros is accomplished using an all pass filter.

24.   (Canceled).

25.   (Currently Amended) The apparatus of Claim 21, wherein said modified signal is

a phase modulated signal and said processing circuit is one ~~or more selected from the~~

~~group consisting~~ of a phase locked loop, a phase modulator, a wideband phase modulator,

a wideband fractional sigma delta modulator, ~~and~~ or a wideband fractional sigma delta

modulator for a code division multiple access signal.

26.   (Original) The apparatus of Claim 21, wherein said characteristic used to regulate

said modified signal is magnitude.

27.   (Previously Presented) The apparatus of Claim 21, wherein said output circuit is

an amplifier comprising a plurality of segments.

28.   (Currently Amended) The apparatus of Claim 27, wherein one or more of said

segments is independently controlled as a power amplifier by ~~a~~ said control signal to

contribute power to said output signal, wherein said output circuit further comprises

~~further comprises~~ a combining circuit for combining the output from each of said

segments to said output <u>signal</u>, and wherein said combining circuit comprises one ~~or~~

~~more selected from the group consisting~~ of power transformers, quarter-wave

transmission lines, discrete LC components, ~~and~~ <u>or</u> a Pi-networks.

29.   (Currently Amended) The apparatus of Claim 27, wherein one or more of said

segments is independently controlled as a current source by a portion of ~~said~~ two or more

signals that represent said input wave to contribute current to ~~an~~ said output signal.

30.   (Currently Amended) A signal transmitter comprising:

        a baseband processor for receiving an input wave and generating a magnitude

signal and a phase signal representing said input wave;

        a phase modulator for phase modulating said phase signal, said phase modulator

having a modulator transfer function associated therewith;

        a filter for transforming said phase signal prior to being modulated in said phase

modulator, said filter having a pre-emphasis transfer function based upon determining a

discrete transfer function from said modulator transfer function, determining a target

transfer function such that said target transfer function multiplied by the inverse of said

discrete transfer function produces said pre-emphasis transfer function, and transforming

any unstable poles and/or zeros in said pre-emphasis transfer function to stable poles

and/or zeros, wherein said target transfer function represents a low pass FIR filter having

a gain of about unity across substantially all of the frequency range of said FIR filter; and

        an amplifier comprising a plurality of segments for amplifying said phase

modulated signal <u>transformed by said filter</u> using said magnitude signal to generate an

output signal for transmission.

31.   (Currently Amended) The transmitter of Claim 30, wherein said discrete transfer

function is determined using one ~~or more selected from the group consisting~~ of an S-

Appl. No. 10/633,136
Response Dated August 14, 2007
Reply to Office Action of May 14, 2007

Docket No.: 18098
Examiner: Lu, Jia
TC/A.U. 2611

function, input and output signals, ~~the~~ inverse-invariant method, ~~and the~~ or Steiglitz-

McBride algorithm.

32.   (Original) The transmitter of Claim 30, wherein said transformation of said

unstable poles and/or zeros is accomplished using an all pass filter.

33.   (Canceled).

34.   (Currently Amended) The transmitter of Claim 30, ~~wherein said output circuit~~

further compris~~ing~~es a combining circuit for combining the output from each of said

segments to said output signal, comprising one ~~or more selected from the group~~

~~consisting~~ of power transformers, quarter-wave transmission lines, discrete LC

components, ~~and~~ or a Pi-networks.

35.   (Currently Amended) The apparatus of Claim 30, wherein one or more of said

segments is independently controlled as a current source by a portion of ~~said~~ two or more

signals that represent said input wave to contribute current to ~~an~~ said output signal.